SHOP talk

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Year 2000

The problem that won't go away

By Karen Purtee

Year 2000, or Y2K as it's called in industry jargon, is the issue that will not go away. The issue regards whether or not our lives and professions will continue unabated into the next millenium. You see, computer programmers have since the 1950s used only two digits to denote the year in their automation operating instructions. Consequently, many computers will read the year 2000 as 00, as in 1900. Quite a glitch, right? The $64,000 question is whether or not this issue will be a minor distraction in our facilities or will portions of our business and other parts of our lives come to a complete halt?

To explore the hot topic a videocoference took place Thursday, November 20, 1997. It was jointly produced by the Plant Operations Support Program and the International Facility Management Association (IFMA), South Puget Sound chapter and sponsored by Johnson Controls, Incorporated.

The presenters were John Saunders, manager of the State Department of Information Services (DIS) Year 2000 Program Office, Lee Knawa of the State Department of Transportation (WSDOT), and Jude Anders, manager of Johnson Controls Engineering Services. Hosting the program were Jim Vane, IFMA chapter vice-president and Bob MacKenzie, manager of the Plant Operations Support Program.

Washington State has been a leader in addressing the impending problems of the computer-related turn of the century problems, according to Mr. Saunders. His presentation covered the background of software and the state goal of no interruptions of vital public services or loss of public resources.

"The emphasis of our office's efforts have been in business applications and software programs used by state agencies," he said. "I also share the belief that for each PC there are ten operating systems in other devices that have embedded systems, interfaces or software controls that need to be identified, corrected or converted to continue functioning into the 21st century."

DIS offers an independent Risk and Readiness Audit to state agencies and has a web based clearinghouse on the Internet at http://www.wa.gov/dis/y2000/y2000.htm

Mr. Knawa advanced the topic of embedded prompt chips and WSDOT's response to the problem by identifying the critical systems via a complete audit.

"Metering devices cannot be trusted, but chips that stop equipment operation, halt the ability to do business and put the public in peril should be termed critical," he said. " Your emergency response and communications equipment should receive the priority attention."

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Inside

A Maintenance Champion Retires

John M. Adsit, P.E.

Since 1990, John M. Adsit, PE, has directed an office charged with responsibility for Contracts, Engineering, Facilities Management, Capital Planning, Budgeting and Construction programs for the State Department of Corrections. The prison capacity has doubled during John's tenure, yet projects are routinely brought on-line under budget.

Through all this welter of change and development, John has been an erstwhile champion of plant operations professionals. He has pled our cases to executive management and was a key supporter in the creation of the Plant Operations Support consortium. John sees the value in solid maintenance programs and never hesitates to extol the virtues of preventive measures versus costly capital outlays.

John has been there, done that. He has served as the District Engineer for the Army Corps of Engineers in San Francisco and the Deputy Chief of Staff, Engineer for the Training and Doctrine Command at Fort Monroe ,Virginia. Later, he was director of Far East Operations in Bangkok for Metcalf & Eddy (M&E), International and the construction manager for M&E projects in Thailand. He was also Dean of Engineering at Saint Martin's College in Lacey. John holds a BS in Civil Engineering from the University of Washington, a MS in Civil Engineering from the University of Wisconsin at Madison and is a graduate of the US Army War College.

He is a registered engineer in California and Washington. John retires from state service in February 1998. We wish him the very best in a well-deserved retirement; and thank him for his unswerving support of hard working plant managers. He is a champion with a track record worthy of emulation.

Editor

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New members appear in green type

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Clark County
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National Association of State Facilities Administrators (NASFA)
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Please send address label with corrections to:

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It's free and provides timely, informative discussions on facility-related issues. Visit our web site at www.ga.wa.gov/plant/operlist.htm

and follow the prompts!

Shop Talk is a quarterly publication of the Plant Operations Support program. The newsletter is intended to be an informative and operationally-oriented medium for public facilities managers. Contents herein are also available on the program's web site at **www.ga.wa.gov/plant/plantops.htm**

We welcome feedback on the newsletter's contents and input from readers. We reserve the right to edit correspondence to conform to space limitations. Bob MacKenzie, program manager and editor, (360) 902-7257 or e-mail bmacken@ga.wa.gov. Karen Purtee serves as editorial assistant.

Department of General Administration, PO Box 41012, Olympia, WA 98504-1012. Marsha Tadano Long, Director.

Advanced power source marks energy technology for future

North to Alaska to find a best practice

Guest Article by Ingrid Martin

The Alaska National Guard armory at Fort Richardson has fired up a pair of 200-kilowatt fuel cells, alternative sources of electricity and heat that are at once highly cost- and fuel-efficient, environment-friendly, and the first of their kind in Alaska. The armory, which previously fed off the post power plant, is now independent for all its power needs and most of its heat.

One fuel cell was purchased by the state; the other is part of a federally endorsed demonstration program. Both were installed and are being maintained by Chugach Electric Association Inc., which is interested in their eventual widespread use as an alternative to centralized distribution upgrades.

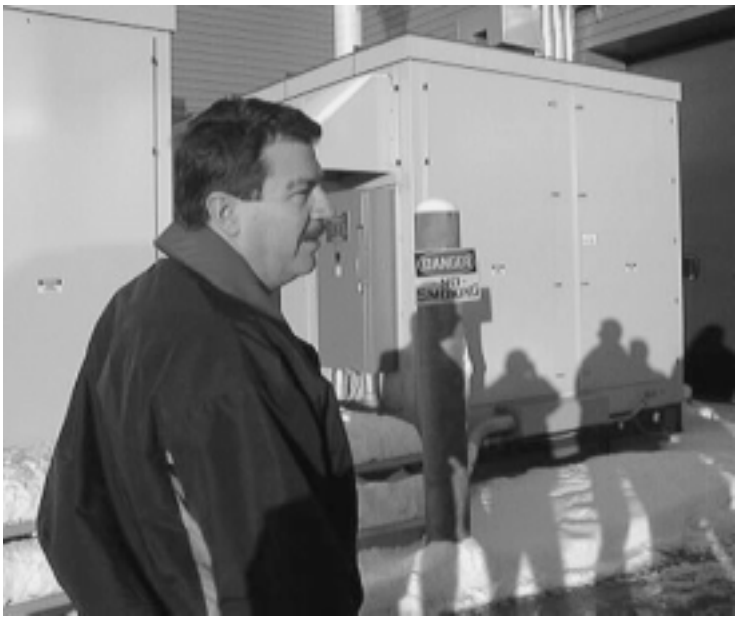
The outwardly nondescript, 18 by 10 by 10-foot white units are made by Connecticut-based ONSI Corp., a subsidiary of United Technologies Corp., and to date are the only commercially available fuel cell power plants. They represent the future of power production, proponents say, because they are significantly more efficient that conventional methods, and produce less noise, vibration and pollution.

"There are virtually no emissions," said Jim Buckley, an energy consultant and former energy management specialist for the Alaska Department of Military and Veterans Affairs. To produce electricity, a fuel processor warms natural gas and boosts the amount of hydrogen it contains. The enriched fuel and air then feed a fuel cell power section that produces direct-current electricity and reusable heat. A power conditioner converts the electricity into high-quality alternate current power, free from voltage spikes and harmonic distortions. Water, carbon dioxide and heat are byproducts of the process.

According to the U.S. Department of Energy, fuel cell power plants are expected to provide a significant share of electrical power into the next century and play a major role in a deregulated power industry.

Researchers at the Energy Department's Morgantown Energy Technology Center note that the Clean Air Act mandates significantly reduced emissions of sulfur and nitrogen compounds from existing power plants, and sets strict limits on emissions from new sources. These restrictions encourage the use of underutilized fuels, they say, particularly natural gas, by electric power producers.

As fuel cells catch on, they add, high-technology manufacturing processes will create more skilled jobs. The first of the two cells was purchased using a combination of state funding and $200,000 awarded through the U.S. Department of Energy Global Climate Change Program, Buckley said. The second was installed as a demonstration cell by the U.S. Army Construction Engineering Research Laboratories in Champaign, Illinois on loan from ONSI Corp. The armory will own the unit at the conclusion of a five-year test period, Buckley said.



Harold Riley, maintenance superintendent of the Senator Ted Stevens Armory at Fort Richardson, Alaska, explains the operations of a fuel cell to a group of Alaska facility managers in December. The Armory is the flagship facility of the Alaska State Department of Military and Veterans Affairs.
Photo by Bob MacKenzie.

"They're trying to commercialize this because it's so environmentally friendly," he said.

Even if the state had assumed all costs for both units, they would pay for themselves in less than seven years, Buckley noted. In the meantime, the armory produces 100 percent of its power needs 95 percent of the time, and generates 65 percent to 70 percent of its heat requirements.

Military Affairs has since ordered two more 200-kilowatt fuel cells for installation in an operations and maintenance shop and office expected to come under construction next year adjacent to the Glenn Highway facility. Meanwhile, a 1-megawatt version is being considered for installation at Bryant Airfield also on post.

"We're getting our feet wet," said Peter Poray, Energy Services manager for Chugach Electric. "We have some other candidate locations in mind."

Ingrid Martin is a staff writer for Alaska Journal of Commerce. The above article appears with permission of the Journal.

Member News:

Plant Operations Support program recognized by two prestigious industry groups

W. Barney Holt, (center) Vice-President of the Association for Facility Engineering, Public & Professional Affairs, presents the Award of Merit to Bob MacKenzie, representing the Plant Operations Support consortium, during the awards luncheon in Las Vegas in October. Joseph H.Greil, PE/CPE. (l) AFE president-elect, participated in the presentation. The National Aeronautics and Space Administration and the Chevron Oil Company were also recipients of the prestigious award. The award was a first for a public agency in Washington state and recognizes excellence and innovation in facility management and engineering.
Photo provided courtesy of AFE Public Affairs.

Representing the Plant Operations Support consortium and the State of Washington, Ron Niemi (l), received the International Facility Management Association (IFMA) Golden Circles Award from Geert Freling, IFMA's regional vice-president of Europe, the Middle East and Africa during the association's World Workplace '97 conference in Dallas. The award recognizes an organization whose facility management practices contributed to creating and managing productive work environments and supported a company's business plan. Niemi is a board member of IFMA's South Puget Sound chapter and a facility professional in the State Department of Transportation.
Photo provided courtesy of IFMA.

Member Spotlight

Tukwila is first city to join consortium

Tukwila is located just adjacent to and south of Seattle at the crossroads of two major interstate highways, I-5 and I-405. Tukwila (whose name in local Native American dialect means "land where the hazelnuts grow") encompasses 8.6 square miles. With a residential community of 14,900 citizens and a vibrant commercial community of over 1,800 businesses employing 40,000 persons, the City has a diverse and challenging customer base.

The City has a Mayor-Council form of government and is operated by 280 salaried personnel. The Internal Operations Division, managed by Albert Spencer, is part of the Public Works Department and is responsible for maintaining the City's facilities and vehicle fleet.

"The City looks forward to participating in the consortium." said Albert E. Spencer Internal Operations Manager. "We see this as an excellent opportunity to share knowledge and network with facility maintenance peers."

The Facilities Maintenance crew is comprised of a Crew chief, Building Maintenance Technician, and five custodians. A shared Senior Administrative Clerk provides administrative support. Facilities Maintenance is responsible for forty-seven facilities totaling 193,000 square feet located throughout the city. These facilities include administrative office buildings, fire stations, park restrooms and public works shops. The most recent addition and challenge for the staff is a 48,000 square foot community center built early in 1997.

Attention!

Juvenile offenders undergo basic training in soft-skinned building structures

By Michael Weinstein

This innovative Sprung Structure in Connell, Washington houses juvenile offenders enrolled in a rigorous military-style boot camp, designed to provide a positive learning environment.
Photo provided courtesy of Michael Weinstein.

The Mission

Starting with raw land, construct and open a fully functioning "basic training camp" including a ropes course and security system for juvenile offenders in 60 days.

Under contract with the State of Washington Juvenile Rehabilitation Administration, a non-profit group, Second Chance is operating the 48 resident medium security youthful offender program. This "Basic Training Camp" is modeled on a military style regime supported with extensive counseling and other services.

The primary emphasis of the Basic Training camp is to create a rehabilitative environment. From clean up or work details to the education program to casual interactions, all elements of resident life are oriented to teaching and practicing positive values, norms and behaviors.

Location

The responsibility for the implementation of the facility rested with CONTINUUM and its president Michael Weinstein of Seattle. After several failed attempts at siting as a result of community resistance, Connell, a small town in eastern Washington forty minutes from the Tri-Cities area (the site of the Hanford complex) provided the location for the project.

Connell was already the home for an existing 400 bed minimum security adult facility, Coyote Ridge, so that both the towns' residents and council were aware that security would not be a problem and appreciated the economic benefits in jobs and services that would result.

The Structures

Leading providers of structures that could be rapidly erected, both those offering metal prefabricated buildings and "fabric" structures, were interviewed. Sprung Structures, based in Calgary, Alberta, Canada was selected. Their approach uses extruded aluminum I-beam arches integrally connected to an all-weather outer membrane of PVC coated polyester scrim to provide a weather protected freespan.

Two structures were ordered totaling about 8,600 square feet, each 40 feet wide and 18 feet six inches high at the peak of the arch. The first building is about 130 feet long and houses the offices and administration, the classrooms and teachers' offices, the kitchen and dining area together with support spaces for bathrooms, janitorial and other functions. The second building is 40 feet by about 100 feet and accommodates the boys and girls dormitories, the dispensary, isolation cells, bathroom and showers and laundry.

Each of the structures is pre-engineered. Insulation is placed between an interior and exterior layer of the scrim. Within 48 hours after placing the order, engineering drawings and calculations arrived, and by the end of the week architectural floor plans showing all electrical, lighting and plumbing fixtures together with elevations were completed.

As planned, the Basic Training Camp opened on April 15, 1997, less than 45 days from the time the fabric shell components were delivered to the vacant land. It took an additional two weeks to finish all the remaining detailing, especially for the kitchen and the bathrooms.

Evaluation

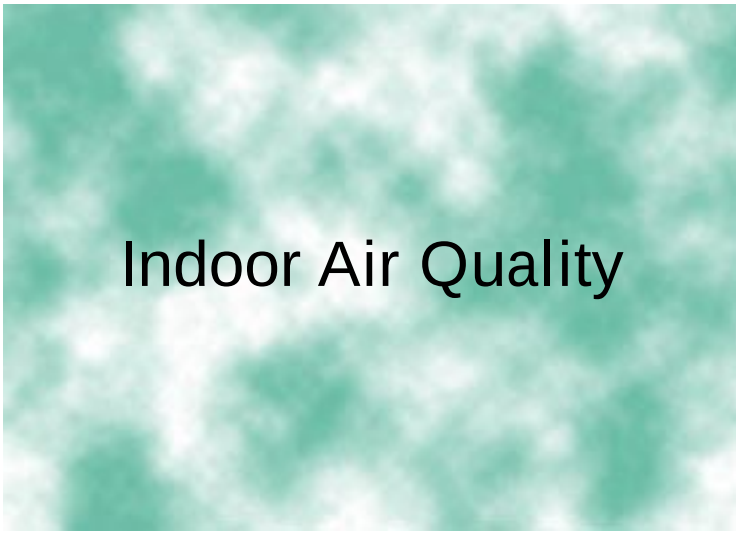
On-going staff evaluation is providing guidance on modifications to the plan and the performance of the structures as well as serving to define a functional program that is guiding the design for the new facility.

Michael Weinstein is president of CONTINUUM, a company offering project and process management, architectural design and planning services to public and private sector clients throughout the Northwest. He is also a partner with Angela Rinaldo in Correctional Resources Northwest, a company providing both correctional and social service programs.

Interior partitions can be arranged to fit a variety of needs, including these in the Second Chance Boot Camp facility in Connell, Washington.
Photo provided courtesy of Michael Weinstein.

Filter Out IAQ Problems

by Thomas Capes



In part three of this three-part series, we combine the knowledge of ventilation and filtration, the information on microbial aerosol organisms, and explore good housekeeping methods to improve IAQ.

If Not Trapped, Control Its Growth

Every air filter, no matter how efficient, is also inefficient to a certain extent. No filter traps every particle or microbe. Elimination of unfiltered point sources within the HVAC system has the same benefits to the indoor environment as the use of anti-microbials in air filtration media. The only way to ensure these point sources are controlled is to keep them clean and free of microbial growth.

There are many potential areas in the HVAC system that can act as reservoirs for microbial growth. Cooling coils are one of the most likely areas to trap microbes and dirt. Coil cleaning and sanitizing products with biocidal characteristics can help control the microbial growth on these surfaces.

Some of the considerations in choosing one of these products are:

Ease of application. Most coil cleaners are quite caustic and acidic. These products rely on strong chemical interactions to remove microbial growth (and often the top layers of the metal). There are new products available that employ surfactant technology, as opposed to brute chemical strength, to clean coils.

Controlling new growth. Cleaning surfaces within the HVAC system is not enough. Equally important is controlling growth once the surface is clean. There are products in the marketplace that continue to control growth three to six months after application. They could easily be incorporated into the maintenance cycle for prefilter change-outs.

Worker safety during application. As with the anti-microbials used in the air filtration media, EPA registration is the assurance to the contractor that the product is safe for the intended use when used as directed.

Since all surfaces in an indoor environment can contribute to poor IAQ, it's important to take your efforts beyond the air filters and cooling coils. While a comprehensive preventive maintenance program is clearly the cornerstone of better IAQ, the implementation of anti-microbial-treated indoor surfaces, such as carpet and carpet tiles, is an insurance policy that these surfaces do not contribute to further amplification of microbial growth. Of course, the sheer square footage of the potentially affected area makes the investigation and control of indoor surfaces a daunting task.

Our research into indoor air quality has shown there's no one single product, solution or "fix" that yields better IAQ. While some of the issues associated with IAQ are quite complex, the most effective solutions and improvements are based on good common sense and the effective control of fine particulate and point sources of microbial growth within the indoor environment. So keep the three elements in mind:
Trap *it*
If trapped, don't let *it* grow
If not trapped, control *its* growth

Thomas Capes is a market development manager for AAF International, the manufacturer and marketer of American Air Filter products in Louisville, KY. AAF shares the Washington state contract for air filters with another vender.

Key Government IAQ Resources

CPSC (Consumer Product and Safety Commission)

Consumer Product Safety Commission Hotline, (800) 638-CPSC or write to: CPSC, Washington, DC 20207

EPA (Environmental Protection Agency)

Indoor Air Quality Information Clearinghouse (IAQ INFO) P.O. Box 37133 Washington D.C 20013-7133 (800) 438-4318
Public Information Center (PIC) 401 M Street S.W (PM-3404) Washington, D.C. 20460 (202) 260-2080

NIOSH (National Institute for Occupational Safety and Health)

Technical Information, Branch, Information Number, (800) 356-4674

OSHA (Occupational Safety and Health Administration)

Publications Office (202) 219-4667 or (202) 219-926

Washington State's Capital Budgeting Process
A Primer

By Harvey C. Childs, AIA

The capital budgeting process in Washington state is unique in that it also involves a long-term look at the needs of the state. The Washington State Budget and Accounting Act (RCW 43.88) mandates a long-range approach to capital budgeting and planning. The act requires state agencies and institutions to submit a plan of proposed capital spending for a 10-year period each biennium. This long-range planning is designed to identify future issues and major capital projects proposed to address those issues.

The 10-year planning horizon recognizes that many major capital projects span several biennia from start to finish. In many cases, capital budget decisions must precede the implementation of operating programs with facility requirements by several years. For this reason, it is essential to plan so that decision-makers, both the governor and legislature, can determine how various capital budget options will affect state programs in the future and how today's capital decisions will affect future operating costs.

When agencies or institutions submit a 10-year plan to the governor's budget office, it includes:

An **agency capital narrative** providing a general description of the agency mission and strategic plan, its capital facilities and their condition.

A **preservation** budget request, describing those proposed projects intended to preserve and protect existing physical assets.

A **program** budget request, listing those projects necessary to address program needs.

An **alternate financing** request, identifying those proposed projects involving contractual arrangements for space or facilities.

A **Capital Budget FTE Summary** displaying actual staff and expenditures charged to capital projects.

A **Capital Expenditure Summary** displaying actual and estimated expenditures by project.

As you can see from above, capital projects are grouped into two main classifications: preservation projects and program projects. These two categories provide a framework within which projects can be compared and selected by the budget office.

Preservation projects maintain and preserve existing state facilities and assets, and do not significantly change the program use of a facility. Examples include renovation of building systems and finishes, utility system upgrade, repairing streets and parking lots, etc.

Program projects are those intended to accomplish a program goal such as changing or improving the use of existing space, or creating a new facility or asset through construction or purchase. This category is quite broad, and includes everything from building a new university library to renovating a mental health ward.

Capital projects for the Ten Year Capital Plan are prioritized in two ways. The first relates projects to the agencyís strategic plan and corresponds directly to the goals and objectives derived from that plan. The second listing corresponds to the priority structure used in reviewing capital budget requests. By cross-referencing these two lists, one can assess how agency priorities relate to statewide priority classifications, which include:

1. **Protection of people.** Actions to alleviate health hazards or reduce risks to building occupants or clients.

2. **Protection of assets.** Work to extend the life of infrastructure and facilities.

3. **Protection of the environment.** Projects to reduce environmental risk.

4. **Cost savings.** Projects in this category should have a payback period of seven years or less.

5. **Program need or requirement.** Capital requests to accommodate new programs, improve service delivery, maximize federal aid, or to meet space needs that are the result of program expansion.

Once projects are selected for inclusion in the capital plan, appropriate funding sources are identified. For short-term improvements, cash accounts are used whenever possible. For larger "program" projects with a long useful life, long-term bond sales or other long-term financing options are appropriate. The term **"capital project"** is used to distinguish capital from operating activities and is based on the longevity or useful life of the work to be accomplished. This "useful life" criteria is also used in determining which projects are eligible for funding from the proceeds of long-term bond sales or other forms of long-term financing.

Based on review and evaluation of agency Capital Plan proposals, the governor will prepare his Ten Year Capital Plan. Projects included in the first biennium of the plan constitute the governor's capital budget. The governorís Ten Year Capital Plan is submitted to the Legislature for action.

This same process is repeated every two years and the Ten Year Capital Plan is updated.

Harvey Childs is Capital Budget Assistant/Architect in the Washington State Office of Financial Management.

Y2K Continued from Page 1

Mr. Knawa pointed out "a garage door may not open automatically, but it has a manual operation that can be used, so it's not really critical." However, if an automated vault locking system cannot be operated manually, the system would be determined to have a critical impact on the organization. After the critical systems are identified, back-up plans are developed. Mr. Knawa's advice was to plan ahead, especially when purchasing. He supplied handouts of suggested wording for inventory of equipment, contacting vendors for reliability statements, and contract specifications.

Furthering the proactive theme, Jude Anders of Johnson Controls listed an analysis of facility equipment that has date calculations, sequencing, leap year adapters, or any logging or reporting date based capabilities.

"Even if your supplier affirms a system, test all real time clocks, building operating systems and connecting systems," he said. " Some solutions can be a change of software, firmware or upgrade."

The horizon of failure is before, at and after the rollover into the new century. Mr. Anders suggested. "Plan for failure at the year 2000 and the equipment that continues working becomes a gift."

Bob MacKenzie's parting words were to "find and deal with those embedded chips." And, since he read that there are over 1100 embedded chips in certain passenger jets, he doesn't intend to fly on December 31, 1999! All presenters and hosts emphasized the Year 2000 issue is a challenge that cannot be "wished away." The Plant Operations Support program has compiled an extensive information packet on the issue. Contact Karen Purtee (360) 902-7194 or e-mail kpurtee@ga.wa.gov

Karen Purtee serves as editorial assistant for the Shop Talk publication team

Mark your calendars for the next professional development videoconference!

If you've ever worried about personal liability in the workplace.

If you've wondered whether or not your organization will be there for you if the tort lawyers come knocking.

If you believe there's no way you can keep up with the mass of compliance, regulatory and health-related material that's piled on your desk.

Then you need to attend a videoconference on Thursday, March 19, 1998 from 9:00 am to 11:00 am, to be produced by the Plant Operations Support consortium. We'll discuss a number of hot-button issues directly confronting plant and facility managers around the country.

A distinguished panel of compliance, legal and industry professionals will address personal liability linked to lead-based paints, asbestos abatement, violence in the workplace, fall restraint, confined space; lockout/tagout and more.

Hear what your contemporaries are doing to cope with issues of personal liability and compliance.

This videoconference will take place at sites around Washington. Look for the announcement in the mail and on the Plant Operations homepage: http://www.ga.wa.gov/plant/plantops.htm

For more information, contact Bob MacKenzie (360)902-7257 or E-mail bmacken@ga.wa.gov

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